

Avian Lab Tests

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The unmistakable look of a sick bird.

Veterinarians have a tremendous responsibility when asked to qualify the health of an avian patient. The first and absolutely the most important principle to be understood is that no one, not even the most skilled of practitioners, can assure the good health of an avian patient through visual means alone. In other words, even the most healthy looking of birds can be harboring hidden disease for which there are no external signs.

In order to maximize the chance that hidden disease is not present, the veterinarian must first visually scrutinize the patient looking for any physical abnormality that may suggest an underlying illness. Abnormal choanal features (details in the oral cavity), slight color changes in the feathers, asymmetrical nares, etc. may imply that the bird is harboring a problem which has not yet caused him to be clinically ill. These signs may directly or indirectly dictate that certain tests be

performed to help explain the presence of the signs. Once the physical exam is completed, laboratory samples are collected and tests are run to assess the patient's health.

When a diagnostic laboratory panel is formulated, some tests are selected that provide information about the overall health of the bird while others are selected to provide information about a specific abnormal physical finding. It is imperative that all major aspects of a pet bird's health be evaluated; limiting an evaluation to the investigation of an isolated problem may fail to reveal an underlying and potentially more serious illness.

The number and implications of all the tests available to avian practitioners is extensive and continually expanding. The following discussion is a profound oversimplification of the more commonly utilized tests and their significance. This will hopefully demonstrate to the pet owner the importance of utilizing these diagnostics and assist him or her in making sense of the information they provide.

Complete Blood Count

The single most important test for almost all avian patients is the Complete Blood Count, or CBC. Here at Avian & Exotic Animal Medical Center practically every live bird which comes through the door has this test performed. The CBC represents a significant part of the immune system. While many avian diseases may go undetected by the owner, many fewer escape detection by the bird's immune system. The CBC is divided into several parts which provide different details regarding the activity of this part of the immune system as well as information on the condition of the blood itself. Many types of infections, anemia, low

blood protein, parasitism, etc., may be demonstrated by the CBC even when the bird appears perfectly normal. Because of the extensive information it provides, the value of the CBC cannot be overemphasized.

Electrophoresis (EPH, SPE)

A test which evaluates another part of the immune system is the Electrophoresis (EPH, SPE). Immune responses are characterized by changes in levels of certain blood proteins, and this test measures those proteins. Changes in specific proteins suggest the presence of certain physiologic or pathologic processes. Many conditions which would otherwise go undetected may be demonstrated with this test. This test also serves to strongly support or contradict diagnoses revealed by other tests.



This blood sample contains about 40% fat, a serious problem.

Biochemical Tests

Certain biochemical tests reveal the condition of various organ systems in the bird. (For this discussion the full biochemical names are not important; they will be referenced by the abbreviated names commonly employed by veterinarians.) In birds these tests are often quite different than in dogs or cats, so the veterinarian must be specifically experienced with birds for the correct inferences to be drawn. Because the bird's liver is so commonly involved in both infectious and metabolic disease, two tests are quite useful in the avian profile. The AST

Photos by Don Harris, DVM

(also called SGOT) is a measure of liver (and muscle) damage, while the Bile Acids test assesses liver function. The two are not necessarily related. A damaged liver may still function satisfactorily, while a liver may be dysfunctional but not damaged. Both tests are necessary to fully evaluate the liver. Many diseases such as virus infections and psittacosis damage the liver while other disorders such as malnutrition affect liver function.

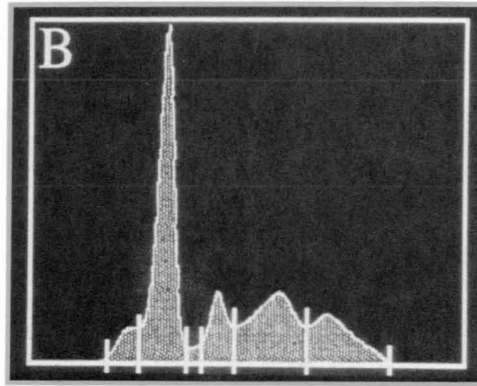
Because the AST can also originate from muscle damage, another biochemical is used to discern the source of an elevated AST. The CK (or CPK) is released by damaged muscles and nerves. Therefore if an AST alone is elevated the source is probably liver; if the AST and CK are elevated the source is probably muscle; if the CK alone is elevated the source is likely to be nerve tissue. Remember, this is an oversimplification. Combination problems do occur, thereby complicating the diagnosis.

The kidneys also are commonly affected in avian illness. The Uric Acid measures kidney function. There is no blood test which specifically assesses kidney damage, so many times subtle kidney damage is not recognized until so much damage has occurred that the function is compromised. Because of this, most abnormal Uric Acids findings imply very serious and sometimes terminal disease. A urine analysis can demonstrate evidence of kidney disease at earlier stages. Technical skill is necessary to extract diagnostic information from avian urine samples since the urine is usually mixed with feces.

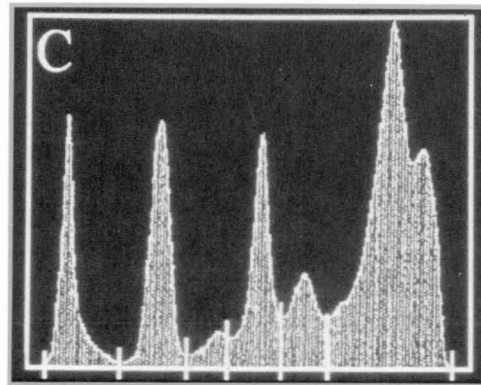
Blood Calcium levels can reveal aspects of the bird's diet, vitamin status, and, in females, reproductive status. A low calcium level in an African Grey often means the bird is not being exposed to enough natural daylight. Blood Glucose rises moderately with stress and significantly in diabetes. Critically low blood glucose is usually a grave sign and death is often imminent. Elevated blood Amylase has been associated with pancreatic disease and intestinal disorders.

Many other chemistries provide information that is useful in specific situations. Those discussed here are the ones most commonly utilized.

Photos by Don Harris, DVM



A normal immune panel.



Immune panel from a bird with psittacosis.

Fecal Analysis

Analysis of the droppings provides a degree of information depending on the tests performed. Tests currently utilized to screen for parasites, abnormal bacteria, yeast, etc. are not fool-proof means of ruling out potential problems. The bacterial Culture and Sensitivity test provides a more accurate picture of the microbiological population within the bird's digestive tract. The absence of findings in any of these tests does not conclusively eliminate the possibility of those conditions for which they were utilized. For example, the absence of parasites in a stool sample does not guarantee that the patient is parasite free; other tests such as the CBC however may suggest their presence and warrant further investigation.

Culture/Sensitivity

Having been mentioned, the Culture/Sensitivity is probably one of the most misused tests in all of avian medicine. It was once believed that certain bacteria were the primary cause of illness in birds and their pres-

ence always warranted the use of antibiotics. It is now recognized that many of these bacteria are harmful only in certain conditions or, in fact, not harmful at all. In essence, the presence of many "undesirable" bacteria in the absence of other laboratory or clinical signs of illness should often be considered incidental and rarely is the use of antibiotics to eliminate them justified.

For example, the practice of randomly culturing a visibly normal choana (oral cavity) to assess a bird's health can be grossly inappropriate. Bacteria isolated from a perfectly normal choana usually reflects only what has been left there by the diet, the environment, or other incidental sources. Great care and experience is necessary in determining the appropriate course of action in the utilization and interpretation of bacterial culturing in avian patients.

Screen for Specific Diseases

Many other tests exist in avian medicine which screen for specific diseases. Psittacosis, Polyoma virus infection, Psittacine Beak and Feather Disease, and several others can be specifically tested for, in some cases through more than one test. While most of these tests are legitimate, they all share the same problem: neither positive nor negative findings are 100% accurate. All findings must be supported with appropriate clinical and laboratory data. This highly emphasizes the need for diagnostic panels rather than individual spot tests. Without several bits of data to illustrate a complete picture any findings may be misleading.

Conclusion

Although only a small portion of all the available diagnostics have been presented here, the need for formulating and utilizing diagnostic panels should be clearly evident. Primarily, much avian illness goes undetected if laboratory tests are not utilized to reveal hidden disease. In addition, an assortment of carefully chosen tests can provide a highly informative view into the physiologic status of an avian patient allowing reasonable verification of health or insight into a poorly defined state of illness. 